INFORMATION AND COMMUNICATION TECHNOLOGY AS A TOOL FOR MANAGING ORGANISATIONAL CHANGE IN A TURBULENT ENVIRONMENT

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Abstract

Goal theory, system resource theory and population ecology seem to be insufficient in providing a "wholistic" approach to the study of organisation in a turbulent environment. The birth of information and communication technology (ICT) is therefore one of the socio-economic revolutions towards a global knowledge for progress and development in social, economic, cultural, health, scientific political and educational activities. Open system approach was examined based on its usefulness in "synthesizing and analyzing complexity in "live" organizations. The paper focused on the role of ICT in managing organizational change in an increasing turbulent environment. To this end, the paper argued that the survival and growth of organizations in turbulent environmental would depend upon the efficient use of ICT in a correct in relation to environmental changes. It is recommended that a system approach should be employed in the joint design of organisation and their information support systems.

Introduction

According to Browning (1990) information technology is no longer a business resource, it is the business environment. Recent development in information and communication technology (ICT) coupled with increasing global competition are making organizational environment to be more complex and uncertain for survival and growth in an environment of over-increasing complexity. The integration of technology as a co-ordinating mechanism for organizational operating in increasingly turbulent environment has not received much attention. (Dickson and Desanctis, 1991).

This implies that many attempts have been made in the past few decades to manage organizations in turbulent environment, but the effects of such attempts have not been significant. Rockart and Short (1989) opine that information technology would encourage the firms to respond to the "new and pressing competitive forces" by providing for effective management of interdependence". Faced with increasingly turbulent environment, organisations will make use of effective application of ICT. ICT is becoming all pervasive and is having impact on all organizations – in manufacturing as well as in service. In the same line of reasoning, Daft (1992) noted that IT is affecting workers at all levels of organizations from those on the shop floor to the executives. It has become an integral part of all types of technology craft: engineering, routine and non-routine.

This is due to the fact that organisation, according to Drucker (1985) is "a structure in which information acts as the axis and as the central structural support. The current changes in IT according to Benjamin and Levinson (1993) would give rise to the birth of new technology - Intensive organizational structures. Cost of co-ordination" would be reduced to the barest minimum and would in turn lead to new coordination intensive business structures. It would make it possible for organisations to respond to the "new and pressing competitive forces" by ensuring that interdependence is effectively managed. In other words, newer types of co-ordination mechanism would result to inter-organisational relations, based on trust and conditions of unstructured authority.

According to Bakos (1987) most of the early studies regarded information technology (IT) as the dependent variable for analyzing its adoption by organizations. The results of many empirical studies carried out by many researchers (Attwell & Rale, 1984; Cater 1984) in the opinion of Bakos (1987) have proved insignificant in the attempt to analyze IT's impact on organizations. More flexible and adaptive organizations are preferred in the accelerating pace of change and increasing global interdependence (Malone and Crowston (1991). It therefore follows that effective implementation of ICT on organizations would minimize the cost of expected failures and reduce the cost of adjustment, i.e. vulnerability decreases and adaptability improves. The major determent of organizational effectiveness would depend on the degree to which organisations respond to the environment (Benis, 1984).

Organisation process substantial information and make decisions based on the argument that post industrial organizations are faced with complex and turbulent environment (Huber, 1984).

The Concept of ICT

Information has always played a significant role in the life of man Social progress and rapid development in science and technology is due to crucial role of information in the development of society. Information explosion, which is referred to a mass of diversification of information is also occurring. Consequently, Ogunsola and Aboyade (2005) pointed out that the need has arisen for a scientific approach to information and for elucidation of its most characteristic properties which has led to two principal changes in interpretation of the concept of information.

First, its scope was widen to include information exchange, not only between machine and machine, but also between human beings as well as the exchange of signals, in the animal and planet world. Second, new developments and technologies have had a major effect in the way individuals live, play and work worldwide. New technologies challenge the traditional process of managing organisations in turbulent environments. On the other hand, Communication can be referred to as the process of transmitting and receiving idea, information and messages. The definitions of ICT are many, varied and interwoven due to their complex nature and multiple applications. The World Bank defines ICT as "the set of activities which facilitate by electronic means, the processing, translating and display of information" (Rodriguez and Wilson, 2000). ESCAP (2000) see ICTs as technologies people use to share, distribute, gather information and to communication through computers are computed networks. According to Marcelle, (2000) ICT can be described as a complex and varied set of goods, applications and services used for producing, distributing, processing, transforming information (including) TV and radio, broadcasting hardware and software, computer services and electronic media.

The Concept of Environment

Organisation environment include all the elements existing inside and outside the boundary of the organisation that have the potentials to affect all or part of the organisation. Others look at the particular institution or forces that influence organizational performance, but over which the organisation has little or no direct control (Akpovi, 2000). Environment in term of organizational behaviour is of two types – internal and external. The internal environment includes manpower, technology, economy, structure, management strategy while the external environment include economy, physical location, legislature or law, socio-cultural values business ethics, political factors and factors in the international environment.

Uncertainty, according to Galbraith (1977) is the difference between the amount of information required to perform the task and the amount of information already possessed by the organisation.

Open System Theory

The systems approach generally implies interdependence of the component parts with the result that a defect in any of the component parts affects the entire whole (Umoh, 2002). However, classical and neoclassical organizational theories have been criticized because they see organizations as fragmented and closed social systems acting, independent of external forces (Baker, 1973). Closed system theory cannot apply to open system which characterized living entities, including organizations, groups and individuals. The open system theory therefore supports management in facilitating organizational insights, innovation and adaptation due to its potential usefulness in combining separate ideas in organizations. It is often said that "the only major approach to study organisation is to study it as a system. It is argued that the unique characteristic of modern organisation theory is its conceptualization of an organisation as an open system.

To view an organisation as an open system is to recognize the importance of its environment upon which the maintenance survival and growth of an open system depend. A system approach to organizations commences with the assumption that organizations are open system, which of necessity, involve in various forms of exchange with their environment.

In other words, an organisation takes inputs from its environment (output from other system) and through a series of activities, transforms these inputs into outputs (inputs to other systems) to achieve some objectives (Mullion, 1981). In terms of a business organisation, it takes resources such as finance, raw materials, people and information from the environment. After transformation, it return them to the environment in various forms of output such as finished goods, etc. in order to attain certain goals such as profit and consumer satisfaction (Umoh, 2002). Relationship between a system and its environment as well as what goes on with the system is a major consideration of the open system approach. From the foregoing, it can be seen that due to continual interaction with the external environment of which the organisation is an integral part, changes in the environment will certainly affect the conversion process and thus the outputs. The imperative of multiple channels of interaction is correspondingly emphasized by the open system approach. In the course of interacting with and adjusting to their environment, organizations go through series of changes, and in the process, the environment undergoes changes. In the same line of reasoning, and under the impact of technological change, the environmental contexts whereby organisations exist are themselves changing.

Turbulent condition is one in which the accelerating rate and complexity of interaction effects are more than the capacities of production of the organization systems which constitute the environment. Hence, these systems seem to lose control of the compounding results of their actions. Aldrich (1979) defines turbulence not as chaos in the environment, but to an increasing casual interconnection that which make environments obscure or unsafe to local observing. Environment turbulence is thus the degree to which environments are being disturbed by increasing environmental interconnections and an increasing degree of interconnections.

It is pertinent to mention that the environment of organizations are moving towards turbulent field situations that would selectively reward organization that would develop efficient and effective screening, monitory and information processing systems. Organizations are facing decreasing autonomy and increasing independence in the era of emerging turbulent environment.

From the foregoing, it is argued that organizational environment are increasingly turbulent, organizations are becoming important parts of organizational environment and organization are also becoming less independent because of the following reasons:

a). Organisational change is becoming externally influenced.
b). Organisational adaptability depends on the ability to learn and to perform in line with changing environmental possibilities.

Following from this line of reasoning, ICTs are widely employed throughout the corporate environment because they have the potentials to solve many organizational problems of information access and integration while increasing organizational effectiveness in terms of efficiency and productivity. This is because the selective advantage of one intra or inter-organisational configuration over another cannot be determined apart from an understanding of the dynamics of the environment itself

The Role of ICT in Managing Organizational Change in Turbulent Environment

ICTs help organizations in turbulent environment to monitor the preferences of the environment. Feedback is necessary for the survival of organisation and for maintaining a "steady state" or "homeostasis". Organizations use scanning to learning of the impending threats.

The external environment stimuli, the weight and direction of the difference between the goal and its realization determine the modes of scanning which are surveillance and search (Schoderbek, Schoderbek and Kefas, 1980). Surveillance is used for information gathering process and search is tailored toward finding a satisfactory answer to a particular problem. In other words, complex organisations require complex controllers. ICT will therefore provide the "complex controller" to the complex organisation.

ICT helps the organisation in turbulent environment to translate the information on environmental preferences into goals. Organisation continuity, that is, feedback from the environment will be used to plan the organizational goals by making use of ICT access their goals due to the ever-changing environment. ICT helps the organisation to embark on effective structuring in order to have consistency among the design parameters and contingency factors (Mintzberg, 1979).

Organisation in uncertain and complex environment can align their structure with environmental preferences with the aid of ICTs. Scott (1987) noted that organizational structures and goals are influenced by the preferences in the environment. Information processing capacity requirements of the organisation determines the structure of the organisation (Galbraith 1977) which is further governed by the ICT being in place. This is supported by Fowles (1987) who argued that the phenomenal expansion of organizations can be largely due to new developments in the technologies of organizational communication. In the absence of technological communication, Yates (1987) contended that organizations could have evolved differently. Organisation makes more use of ICT for increasing their "organic" features in turbulent environment. Faced with turbulent environment, organsations will create organic structures by application of ICT. Burns and Stalker (1961) observed that "organic" forms are better equipped to support themselves in turbulent environment. ICT at the cure levels of operation convert a bureaucratic administrative structure into an organics (Mintzber 1979). Many of the social conflicts in the organisation are eliminated when tasks are automated.

ICT increases lateral communications in organisation in turbulent environment. Delegation of decision making to workers in organisation operating in turbulent environment is possible with the aid of ICT. This will empower the workers at all levels of the organisation and hence, there is reduction in

information overload on the managers thereby reducing inefficiencies arising from "procedure" in complex situation. Standardizations of co-ordination is facilitated by ICTs and this will in turn facilitated by larger work units or span of control.

Organisations in turbulent environment use more ICT efforts to create co-ordinating mechanism with other firms. ICT give rise to inter organizational linkages which will reduce the costs of co-ordination. For instance, in market driven organizations (Malone and Crowston, 1991), business with larger firms have become possible due to electronic linkages. This will reduce environmental complexity and uncertainty. This would promote complex relationships (inter dependencies) to leverage their core competencies.

ICTs are increasingly playing a crucial role in organizations and in society's ability to produce, access, adopt and apply information. They are being heralded as the tools for the post-industrial age, and the foundations for a knowledge economy because of their ability to enhance the transfer and acquisition of knowledge (Morale-Gomez and Medesse (1998). Their views tend to be shared globally irrespective of geographical location and variations in income level and wealth of the nation. Again, whatever is the view about ICT today, one can say without any fear of contradiction that ICT is not the only cause changes we are witnessing in the contemporary business environment, but the drastic development in ICT have stimulated the current wave of globalization. The use and production of ICT means a fundamental role in the activity of organizations to participate in global economic global activities. Notwithstanding the fact that ICT can be used to acquire and absorb knowledge, it could offer organizations unprecedented opportunities to change system of management in organisation. improve policy formulation and execution, and widen the scope of opportunities for organizations. It could also stimulate the process of learning, knowledge networking, knowledge codification, teleworking in organizations. Organizations in turbulent environment can use ICT to access global knowledge that can help them grow, and communicating with other people in other organizations. However, in developing countries, ICT is available in a limited scale and this raises doubt about the ability of organizations in developing countries to participate in the current ICT - induced global knowledge economy. The unequal distribution and use of ICT across the globe raises questions about whether ICT entails homogeneity for organisation in developing countries. It also raise doubt about the feasibility and desirability of effort to implement the development of ICT through the transfer of best practices from western and industrialized countries to developing countries and whether organizations can use ICT in accordance with the social-cultural requirements of the contexts (Walshan, 2001). ICT has become a subject of great concern to all organisations operating in turbulent environment.

Problems That Hinder The Use of ICT In Managing Organisational Change in Turbulent Environment

Implementing ICT in managing organizational change in turbulent environment is not an easy matter, in spite their many disadvantages.

In the absence of current developments in ICT, one cannot talk of globalization or time-based competitions. It therefore follows that the use of newer ICT capabilities has further increased the turbulence. This is because advances in ICT are being used in more and more complex ways by the businesses to overcome competition (Rockart & Short, 1989). In addition, organizations in turbulent environment are unable to make proper use of ICT facilities because of complexities in the application of newer ICT facilities. The relationship between ICTs and management of organizational change in turbulent environment is also contingent upon some other organizational factors such as culture,

resources, etc. some internal factors as well as other external factors tend to affect the ability of ICT to actually manage organizational change in turbulent environment.

Recommendations

To this end, the following recommendations are put forward:

1). Evermore affordable information and communication technologies, which give rise to evermore high-capacity fast, long-distance transactions has resulted to "information glut". To put behind the problem of "information glut" organizations "selective dispersion of information" technique to the various part of the organisation should be introduced. This will enable work tasks to be grouped in organizational units established around a common performance for the processing of information.

2). There should be improvement in telecommunications, which would make it easier to control organizational units scattered over different parts of the world. The design of the organizational structure should therefore take into account and take advantage of the information and information processing supports.

3). There is a gap in the strong interactions between ICTs and organizational design. There is the need to take a system approach to the joint design of organisation and their information support system (Holt, 1992) to fill such gaps.

Conclusion

This paper revealed the usefulness and application of ICT in managing organizational change in turbulent environment. The use of ICT is no doubt a fundamental factor in scanning the environment of organizations in turbulent environment. ICT has the potential of making organizations in turbulent environment to use feedback to plan the organizational goals. ICT also permits organizations to devise more organizational structures, acting as an inter-organisational linkage and leverage their major competencies.

Although the system approach has been criticized due to its negligible impact on organizational development, it has provides a "holistic" approach of the organizational issues which include all the interactions in the environment – organisation interaction matrix. The "turbulent environment" is becoming unique due to the fact that most organizational change is externally induced. The ability of organizations to adapt is a function of the ability to learn and to perform according to changes in the environment. Increasingly unpredictable change in the organizations transactional dependencies are the outcome of complexity and rapidity of change in "external linkages".

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